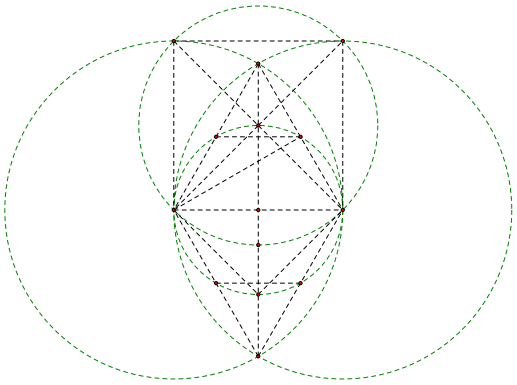
Second Lessons by Euclid's Elements

We learnt in Lesson 1, all we have to learn is just two concepts for understanding everything.

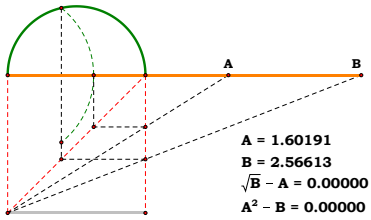


Let us develop the figure from Proposition 1 a bit. Let me refer to it as the Director's Cut.

In this figure is just about every topic area of elementary geometry, arithmetic and geometric recursion, parallels, angles, triangles, addition, subtraction, did I mention parallels? and even the golden ratio, etc. One can view it as a table of contents.

This being so, I think that it is only right to show in our work which part of our opening figure we are examining.

In fact, if you want to show the development of the figure which I call a Grammar Matrix, you will find you can construct it from what is given in the Director's Cut, and proven in Book 1.



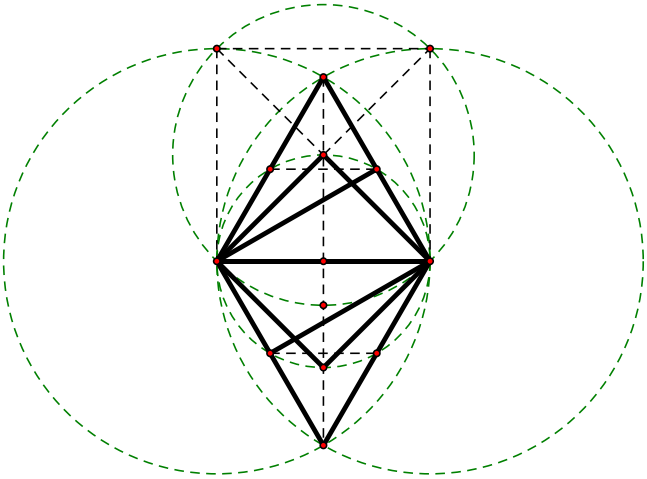
The Director's Cut is an easy figure by which to remember, and reproduce, the bulk of what you will find in Euclid's presentation of the elements. So, instead of trying to claim that such and such is required, one can actually go back to the Director's Cut, and test out assertions by using the Law of Identity, the given figure.

It also means that one cannot claim any part of this figure has to be proven independently of Euclid's work, for, as the figure shows, you would have to deny the Law of Identity itself. So much for history's Einsteins.

In one's first or second go around in the study of Euclid, they may come to see every intelligible being repeated, ad nauseam. Tracing the repetition down to its origin then becomes something worthwhile to do. Plato called it finding the similar idea in the many examples, or today, pattern recognition, a sign of intelligence. Pattern recognition is what defines intelligence because, it is required to learn and teach grammar itself as a mirror of all of reality. So, maybe the Director's Cut is not complete, maybe something is left out, but, again, maybe not, after all, we have only two concepts, the unit, as a noun, not a thing, and the recursion of it, the verb, or the Law of Identity is a behavior, not a thing, and only together do we make that thing called intelligence.

Book 1 Proposition 4.

If two triangles have the two sides equal to two sides respectively, and have the angles contained by the equal lines equal, they will, also, have the base equal to the base, the triangle will be equal to the triangle, and the remaining angles will be equal to the remaining angles respectively, namely those which the equal sides subtend.

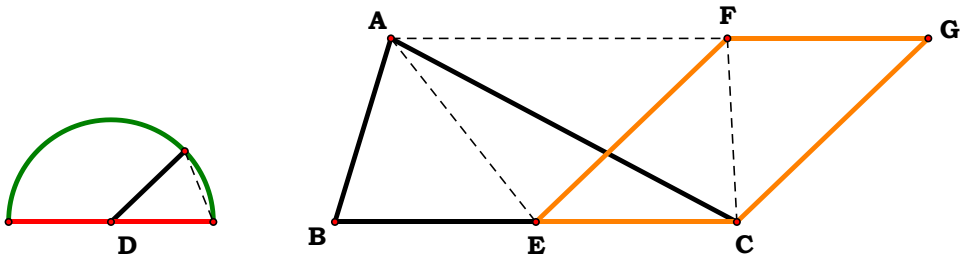


Now, by example, of our first three propositions, we can defer to the base figure, and we can test again, by construction of the triangles in a different place.

There are certainly enough triangles to work with in the figure and thus plenty to repatriate.

Book 1 Proposition 42. Construction Note.

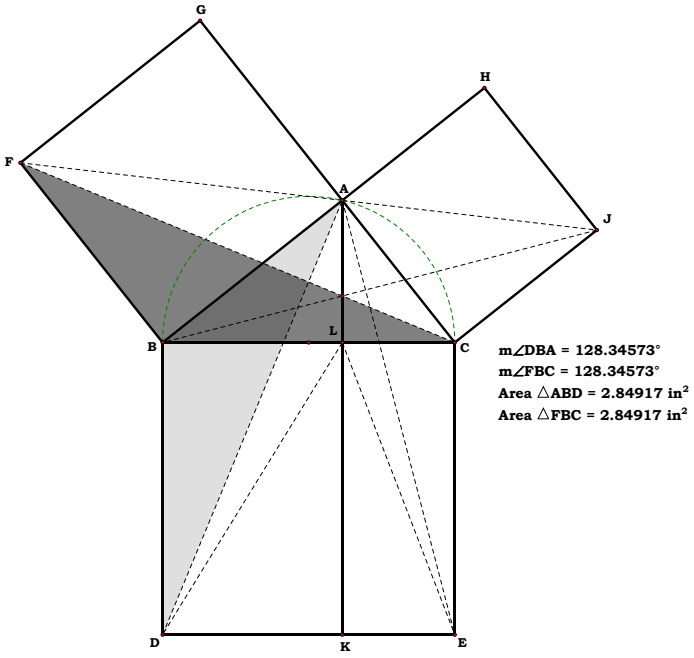
To construct in a given angle a parallelogram equal to a given triangle.



One can play with D and watch the figure.

Book 1 Proposition 47. Review

In right-angled triangles the square, on the side subtending the right angle is equal to the squares on the sides containing the right angle.



I finished what was left out of the figure as Heath gave it.

How to use parallel lines to proof the figure, which is factually, not anyone's theorem at all.

Therefore, twice ABF are equal to twice BLD, and repeat for the other side.

Slide A to L, (parallels BDAK) and C to A (Parallels BFCG), and you should get it if you are having problems.

Which makes me wonder, why, although many sought for a single figure to do all the math with, all the logic with, nobody figured out what I call the Grammar Matrix figure? It is the same, with parallel lines one can do all the math.

One should be able to figure out, by pure examination, every figure in Book 1, is exampled in the developed figure for Proposition 1. Nothing is difficult, plenty boringly pedantic, and others actually are catchup statements which are in the figure, but not mentioned until some odd place in another book. Nothing in the whole of Geometry, is other than how to take advantage of binary recursion.

Due to logistics, the arithmetic examinations in these books, which factually no worthwhile figures are given, are better examined in the Grammar Matrix. In my work I show how to achieve proportional series easily.